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Neutrino Events at IceCube and the Fermi Bubbles

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Abstract content
   (Max 300 words)
Formatting &
Special chars

The IceCube Collaboration recently announced twenty-eight events were observed with energies above ˜ 30 TeV, more than expected from atmospheric backgrounds. We discuss the detectability of the Fermi Bubbles at IceCube and show that up to 4 – 5 of the 28 events could originate from the Fermi Bubbles (FB). If the observed gamma rays from the FB are created due to the baryonic mechanism, high-energy (> GeV) neutrinos should be emitted as a counterpart. These neutrinos should be detectable as shower or track-like events at a Km3 neutrino detector. For a hard primary cosmic-ray proton spectrum E^{-2.1} and cutoff energy at or above 10 PeV, the Fermi Bubble flux substantially exceeds the atmospheric backgrounds. For a steeper spectrum E^{-2.3} and/or lower cutoff energy, to observe the neutrino flux at high significance, longer running time will be required.

Apply to be
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Yes

Level for award
 (Hons, MSc,
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PhD

Main supervisor (name and email)
and his / her institution

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